

# Exposure and Medical Monitoring

WAC 296-849-120

## Section Contents

### **YOUR RESPONSIBILITY:**

**To detect any significant changes in employee health and exposure monitoring results**

### **IMPORTANT:**

- These sections apply when employee exposure monitoring results are either:
  - At or above the action level (AL) of 0.5 parts per million (ppm) for benzene
  - or**
  - Above either of the permissible exposure limits for benzene.

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## Rule

WAC 296-849-12010

### Periodic exposure evaluations



#### Exemption:

- Periodic exposure evaluations aren't required if exposure monitoring results conducted to fulfill requirements in Exposure evaluation, WAC 296-849-11030, are below the action level (AL) and short-term exposure limit (STEL).

### You must

Obtain employee exposure monitoring results as specified in Table 3, by repeating Steps 3, 4, 6, and 7 of the exposure evaluation process found within this chapter, in Exposure evaluations, WAC 296-849-11030.



#### Note:

- If you document that one work shift consistently has higher exposure monitoring results than another for a particular operation, then you can limit sample collection to the work shift with higher exposures and use results to represent all employees performing the operation on other shifts.

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## Rule

### WAC 296-849-12010 (Continued)

**Table 3**  
**Periodic Exposure Evaluation Frequencies**

If exposure monitoring results	Then
Are between the: <ul style="list-style-type: none"><li>• AL of 0.5 ppm</li><li><b>and</b></li><li>• 8-hour-time-weighted average (TWA<sub>8</sub>) of 1 ppm</li></ul>	<ul style="list-style-type: none"><li>• Conduct additional exposure evaluations at least every 12 months for the employees represented by the monitoring results</li></ul>
<ul style="list-style-type: none"><li>• Are above the TWA<sub>8</sub></li></ul>	<ul style="list-style-type: none"><li>• Conduct additional exposure evaluations at least every 6 months for the employees represented by the monitoring results.</li></ul>
<ul style="list-style-type: none"><li>• Have decreased to a concentration between the AL and TWA<sub>8</sub></li><li><b>and</b></li><li>• The decrease is demonstrated by 2 consecutive exposure evaluations, made at least 7 days apart</li></ul>	<ul style="list-style-type: none"><li>• You may <b>decrease</b> your evaluation frequency to every 12 months for employees represented by the monitoring results.</li></ul>
<ul style="list-style-type: none"><li>• Are above the short-term exposure limit (STEL) of 5 ppm</li></ul>	<ul style="list-style-type: none"><li>• Repeat as often as necessary to evaluate employee exposure</li></ul>
<ul style="list-style-type: none"><li>• Have decreased to below the AL and the STEL</li><li><b>and</b></li><li>• The decrease is demonstrated by 2 consecutive evaluations, made at least 7 days apart</li></ul>	<ul style="list-style-type: none"><li>• You may <b>stop</b> periodic exposure evaluations for employees represented by the monitoring results</li></ul>



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## Rule

### IMPORTANT:

- Medical evaluations conducted under this section will satisfy the medical evaluation requirement found in Respirators, Chapter 296-842 WAC.

### You must

- Provide the relevant medical follow-up specified in Tables 4 and 5 to any employee exposed to benzene during an emergency.
- Make medical evaluations available to current employees who meet the following criteria:
  - Potential or actual exposure to benzene at or above the action level (AL) for at least 30 days in any 12-month period.
  - Potential or actual exposure to benzene at or above either permissible exposure limit (PEL) for at least 10 days in a 12-month period.
  - Past exposure to concentrations above 10 ppm benzene for at least 30 days in a 12-month period before November 11, 1988.
  - Current or past work as a tire building machine operator using solvents containing more than 0.1% benzene during tire building operations.
- Make medical evaluations available at no cost to employees.
  - Pay all costs, including travel costs and wages associated with any time spent outside of the employee's normal work hours

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## Rule

### WAC 296-849-12030 (Continued)

- Make medical evaluations available at reasonable times and places
  - Make medical evaluations available by completing Steps 1 through 6 of the medical evaluation process for each employee covered.



#### Note:

- Employees who wear respirators need to be medically evaluated to make sure the respirator won't harm them, before they are assigned work in areas requiring respirators. Employees who decline to receive medical examination and testing to monitor for health effects caused by benzene aren't excluded from receiving a separate medical evaluation for a respirator use.
- If employers discourage participation in medical monitoring for health effects caused by benzene, or in any way interfere with an employee's decision to continue with this program, this interference may represent unlawful discrimination under RCW 49.17.160, Discrimination against employee filing, instituting proceeding, or testifying prohibited--Procedure--Remedy.



#### Helpful tool:

##### Declination form for nonemergency related medical evaluations

You may use this optional form to document employee decisions to decline participation in the medical evaluation process for exposure to benzene.

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## Rule

### WAC 296-849-12030 (Continued)

#### MEDICAL EVALUATION PROCESS

**Step 1:** Identify employees who qualify, as stated above, for medical evaluations.

**Step 2:** Make medical evaluations available for employees identified in Step 1 at the following times:

- Initially, before the employee starts a job or task assignment where benzene exposure will occur.
- Every 12 months from the initial medical evaluation.
- Whenever the employee develops signs or symptoms commonly associated with toxic benzene exposure.
- After benzene exposure from an emergency.

**Step 3:** Select a licensed health care professional (LHCP) who will conduct or supervise medical evaluations and make sure:

- Individuals who conduct pulmonary function tests have completed a training course in spirometry sponsored by an appropriate governmental, academic, or professional institution, if they aren't licensed physicians

**and**

- Your LHCP uses an accredited laboratory, such as one accredited by a nationally or state-recognized organization, to conduct laboratory tests.

**Step 4:** Make sure the LHCP receives all of the following before the medical evaluation is performed:

- A copy of:
  - This chapter
  - The following information found in the General Occupational Health Standards, Chapter 296-62 WAC:
    - Appendix A, the Substance safety data sheet--benzene, found in WAC 296-62-07525.

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## Rule

### WAC 296-849-12030 (Continued)

- Appendix B, the Substance technical guidelines--benzene, found in WAC 296-62-07527.
  - Appendix C, the Medical surveillance guidelines for benzene, found in WAC 296-62-07529.
- A description of the duties of the employee being evaluated and how these duties relate to benzene exposure.
- The anticipated or representative exposure monitoring results for the employee being evaluated.
- A description of the personal protective equipment (PPE) each employee being evaluated uses or will use.
- Information from previous employment-related examinations when this information isn't available to the examining LHCP.
- Instructions that the written opinions the LHCP provides, be **limited to** the following information:
  - Specific records, findings, or diagnosis relevant to the employee's ability to work around benzene.
  - The occupationally relevant results from examinations and tests.
  - A statement about whether or not medical conditions were found that would increase the employee's risk for impairment from exposure to benzene.
  - Any recommended limitations for benzene exposure.
  - Whether or not the employee can use respirators and any recommended limitations for respirator or other PPE use.
  - A statement that the employee has been informed of medical results and medical conditions caused by benzene exposure requiring further explanation or treatment.

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## Rule

### WAC 296-849-12030 (Continued)

- Step 5:** Provide the medical evaluation to the employee. Make sure it includes the content listed in Table 4, Content of medical evaluations, and Table 5, Medical follow-up requirements.
- Step 6:** Obtain the LHCP's written opinion for each employee's medical evaluation and give a copy to the employee within 15 days of the evaluation date.
- Make sure the written opinion is limited to the information specified for written opinions in Step 4.



**Note:**

- If the written opinion contains specific findings or diagnoses unrelated to occupational exposure, send it back and obtain a revised version without the additional information.

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## Rule

### WAC 296-849-12030 (Continued)

#### IMPORTANT:

- These tables apply when conducting medical evaluations, including medical follow-up for employees exposed to benzene during emergencies

**Table 4**  
**Content of Medical Evaluations**

When conducting	Include
An initial evaluation	<ul style="list-style-type: none"><li>• A detailed history including:<ul style="list-style-type: none"><li>– Past work exposure to benzene or other hematological toxins</li><li>– Exposure to marrow toxins outside of current employment</li><li>– Exposure to ionizing radiation</li><li>– Family history of blood dyscrasias including hematological neoplasms</li><li>– History of blood dyscrasias including genetic hemoglobin abnormalities, bleeding abnormalities, and abnormal function of formed blood elements</li><li>– History of renal or liver dysfunction</li><li>– History of medications routinely taken</li></ul></li><li>• A complete physical examination:<ul style="list-style-type: none"><li>– Include a pulmonary function test and specific evaluation of the cardiopulmonary system <b>if</b> the employee is required to use a respirator for at least 30 days a year</li></ul></li><li>• A complete blood count including a:<ul style="list-style-type: none"><li>– Leukocyte count with differential</li><li>– Quantitative thrombocyte count</li><li>– Hematocrit</li><li>– Hemoglobin</li><li>– Erythrocyte count and indices (MCV, MCH, MCHC)</li></ul></li></ul>

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## Rule

### WAC 296-849-12030 (Continued)

Table 4 -- Content of Medical Evaluations (Continued)

	<ul style="list-style-type: none"> <li>Additional tests the examining LHCP determines are necessary based on alterations in the components of the blood or other signs that may be related to benzene exposure</li> <li><b>Medical follow-up as required in Table 5</b></li> </ul>
<ul style="list-style-type: none"> <li>Annual evaluations</li> </ul>	<ul style="list-style-type: none"> <li>An updated medical history covering:                             <ul style="list-style-type: none"> <li>Any new exposure to potential marrow toxins</li> <li>Changes in medication use</li> <li>Any physical signs associated with blood disorders</li> </ul> </li> <li>A complete blood count including a:                             <ul style="list-style-type: none"> <li>Leukocyte count with differential</li> <li>Quantitative thrombocyte count</li> <li>Hematocrit</li> <li>Hemoglobin</li> <li>Erythrocyte count and indices (MCV, MCH, MCHC).</li> </ul> </li> <li>Additional tests that the examining LHCP determines necessary, based on alterations in the components of the blood or other signs that may be related to benzene exposure</li> <li>A pulmonary function test and specific evaluation of the cardiopulmonary system every 3 years if the employee is required to use a respirator for at least 30 days a year</li> </ul> <p><b>Medical follow-up as required in Table 5</b></p>
<ul style="list-style-type: none"> <li>Evaluations triggered by employee signs and symptoms commonly associated with the toxic effects of benzene exposure</li> </ul>	<ul style="list-style-type: none"> <li>An additional medical examination that addresses elements the examining LHCP considers appropriate</li> </ul>
<ul style="list-style-type: none"> <li>Evaluations triggered by employee exposure during an emergency</li> </ul>	<ul style="list-style-type: none"> <li>A urinary phenol test performed on the exposed employee's urine sample within 72 hours of sample collection                             <ul style="list-style-type: none"> <li>The urine sample must be collected at the end of the work shift associated with the emergency</li> <li>The urine specific gravity must be corrected to 1.024</li> </ul> </li> </ul> <p><b>Medical follow-up as required in Table 5</b></p> <p><b>Reference:</b> Employees who aren't covered by medical evaluation requirements in this chapter may be covered by medical evaluation requirements in other chapters such as Emergency Response, Chapter 296-824 WAC.</p>

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## Rule

### WAC 296-849-12030 (Continued)

Table 5  
Medical Follow-up Requirements

If	Then
<ul style="list-style-type: none"><li>The <b>complete blood count test</b> result is normal</li></ul>	<ul style="list-style-type: none"><li>No further evaluation is required</li></ul>
<ul style="list-style-type: none"><li>The <b>complete blood count test</b> shows any of the following abnormal conditions:<ul style="list-style-type: none"><li>A leukocyte count less than 4,000 per mm<sup>3</sup> or an abnormal differential count</li><li><b>or</b></li><li>A thrombocyte (platelet) count that is either<ul style="list-style-type: none"><li>More than 20% below the employee's most recent values</li><li><b>or</b></li><li>Outside the normal limit (95% C.I.) according to the laboratory</li></ul></li><li><b>or</b></li><li>The hematocrit or hemoglobin level is <b>either</b> of the following, and can't be explained by other medical reasons:<ul style="list-style-type: none"><li>Below the normal limit (outside the 95% C.I.), as determined by the laboratory for the particular geographical area</li><li><b>or</b></li><li>Persistently decreasing compared to the employee's preexposure levels.</li></ul></li></ul></li></ul>	<ul style="list-style-type: none"><li>Repeat the complete blood count within 2 weeks:<ul style="list-style-type: none"><li>If the abnormal condition persists, refer the employee to a hematologist or an internist for follow-up medical examination and evaluation, unless the LHCP has good reason to believe it's unnecessary</li><li>The hematologist or internist will determine what follow-up tests are necessary</li></ul></li><li><b>and</b></li><li>Follow the requirements found in Medical removal, WAC 296-849-12050</li></ul>

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## Rule

### WAC 296-849-12030 (Continued)

Results from the <b>urinary phenol test</b> conducted during an emergency evaluation show phenol levels less than 75 mg/L	<ul style="list-style-type: none"><li>• No further evaluation is required.</li></ul>
Results from the <b>urinary phenol test</b> conducted during an emergency evaluation show phenol levels equal or more than 75 mg/L	<ul style="list-style-type: none"><li>• Provide a complete blood count monthly for 3 months. Include a:<ul style="list-style-type: none"><li>– Leukocyte count with differential</li><li>– Thrombocyte count</li><li>– Erythrocyte count</li></ul></li></ul> <p><b>and</b></p> <ul style="list-style-type: none"><li>• If any of the abnormal conditions previously listed in this table for complete blood count results are found:<ul style="list-style-type: none"><li>– Provide the employee with periodic examinations, if directed by the LHCP</li></ul></li></ul> <p><b>and</b></p> <ul style="list-style-type: none"><li>– <b>Refer the employee</b> to a hematologist or an internist for follow-up medical examination and evaluation unless the LHCP has good reason to believe a referral is unnecessary</li></ul> <p><b>and</b></p> <ul style="list-style-type: none"><li>– Follow the requirements found in Medical removal, WAC 296-849-12050</li></ul> <p><b>and</b></p> <ul style="list-style-type: none"><li>– The hematologist or internist will determine what follow-up tests are necessary.</li></ul>



# Exposure and Medical Monitoring

WAC 296-849-120

## Rule

WAC 296-849-12050

### Medical removal

#### IMPORTANT:

- This section applies when an employee is referred to a hematologist or an internist for follow-up medical examination and evaluation required in Table 5, Medical Follow-up Requirements, found in Medical evaluations, WAC 296-849-12030.

#### You must

- 1) Remove the employee from areas where benzene exposure is above the action level (AL) by doing either of the following:
  - Transfer the employee to a job currently available that:
    - The employee qualifies for, or could be trained for in a short period of time**and**
    - Will keep the employee's exposure to benzene as low as possible and never above the AL
  - or**
  - Remove the employee from the workplace until either:
    - A job becomes available that:
      - The employee qualifies for, or could be trained for in a short period of time**and**
      - Will keep the employee's exposure to benzene as low as possible and never above the AL
    - or**
    - The employee is returned to work or permanently removed from benzene exposure as determined by completing the medical evaluation process for removed employees.

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# Exposure and Medical Monitoring

WAC 296-849-120

## Rule

### WAC 296-849-12050 (Continued)

#### You must

- 2) Maintain the employee's current pay rate, seniority, and other benefits.



#### Note:

- If you must provide medical removal benefits and the employee will receive compensation for lost pay from other sources, you may reduce your medical removal benefit obligation to offset the amount provided by these sources. Examples of other sources are:
  - Public or employer-funded compensation programs
  - Employment by another employer, made possible by the employee's removal.

#### You must

- 3) Complete Steps 1 through 4 of the medical evaluation process for removed employees, within 6 months of the date the licensed health care professional (LHCP) refers an employee to a hematologist or internist for follow-up.
  - Make sure all examinations and evaluations are provided at no cost to the employee.
    - Make examinations and evaluations available at reasonable times and places
  - and**
  - Pay for travel costs and wages, including any time spent outside of the employee's normal work hours.

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# Exposure and Medical Monitoring

WAC 296-849-120

## Rule

### WAC 296-849-12050 (Continued)

#### MEDICAL EVALUATION PROCESS FOR REMOVED EMPLOYEES

**Step 1:** Make sure the following is provided to the hematologist or internist:

- The information you provided to the LHCP in Step 4 of Medical evaluations, WAC 296-849-12030
- The employee's medical record as described in Medical records, WAC 296-849-12080.



**Note:**

- The examining LHCP may provide this information for you.

**Step 2:** Provide the employee an examination and evaluation by a hematologist **or** internist.

- When the examination and evaluation is completed, you and the employee must be informed, in writing, of the referring LHCP's decision to continue or end the employee's removal from benzene exposure.
- Include the following in the LHCP's decision if removal of the employee continues:
  - The expected time period for removal to continue**and**
  - Requirements for future medical examinations to review the decision.
- If the LHCP recommends the employee **end removal** and return to the usual job with benzene exposure, **skip Steps 3 and 4.**

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# Exposure and Medical Monitoring

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## Rule

### WAC 296-849-12050 (Continued)

**Step 3:** Provide further medical examination and evaluation to the employee when the LHCP's decision from Step 2 informs you that medical removal must continue.



**Note:**

- During this step the LHCP, in consultation with the hematologist or internist, decides whether the employee:
  - May return to their usual job
- or**
- Should be permanently removed from exposures that exceed the AL.
- If the LHCP recommends the employee return to their usual job, skip Step 4.

**Step 4:** When the LHCP recommends permanent removal for the employee, make sure all the following conditions are met:

- The employee has an opportunity to transfer to another job that is currently available (or will become available)
- The job is one the employee qualifies for, or could be trained for in a short period of time
- There is no reduction in the employee's current pay rate, seniority, and other benefits
- The employee's benzene exposures will be as low as possible, but never more than the AL.





# Exposure and Medical Monitoring

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## Rule

WAC 296-849-12080

### Medical records

#### IMPORTANT:

- This section applies when a medical evaluation is performed, or any time a medical record is created for an employee exposed to benzene.

#### You must

- Establish and maintain complete and accurate medical records for each employee receiving a medical evaluation and make sure the records include **all** the following:
  - The employee's name and Social Security number, or other unique identifier
  - A copy of the licensed health care professional's (LHCP's) written opinions including written decisions and recommendations for the employee removed from exposure
  - A copy of the information required in Step 4 of the Medical evaluation process, found in WAC 296-849-12030, **except** for the copy of this chapter and the appendices listed.
- Maintain medical evaluation records for the duration of employment plus 30 years.



#### Note:

- Your medical provider may keep these records for you. Other medical records such as an employee's medical history, need to be kept as a confidential record by the medical provider and accessed only with the employee's consent.



#### Reference:

- To see additional employee medical record requirements, including access and transfer requirements, go to another chapter, Employee Medical and Exposure Records, Chapter 296-802 WAC.

